Cmt B1

wherein said insulating sheet comprises a plurality of holes therethrough, one end of each of said leads being fixed on a first surface of said insulating sheet, and an opposite end of each of said leads being shaped to be afloat in said holes.--

R E M A R K S

The Office Action mailed July 3, 2002 has been reviewed and the comments of the Patent and Trademark Office have been considered. Claims 1-9, 12-14 and 17 are pending for consideration.

Rejection under 35 U.S.C. §103

Claims 1-9 and 12-14 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,342,726 to Miyazaki et al. (hereafter "Miyazaki"). Applicant respectfully traverses this rejection for the following reasons.

One feature of the invention as recited in independent Claim 1 is that the plurality of solder balls provided with the semiconductor chip are electrically connected via the leads to corresponding ones of the connection pads on the wiring substrate, respectively (Fig. 1). According to this feature, the semiconductor chip can be easily detached from the wiring substrate.

On the other hand, in Miyazaki, a lead 11 connects a soldering bump 5 to a bonding pad 7 of a semiconductor chip 1. Furthermore, an elastomer 2 and a sealant 6 are provided between the soldering bump 5 and the semiconductor chip 6 (Fig. 2).

Therefore, it is difficult to detach the semiconductor chip 1 from the other components.

Thus, in the invention, the leads that pass through an insulating sheet connect the solder balls of a semiconductor chip to the connection pads of an underlying wiring substrate. By contrast, in Miyazaki, the leads that pass through an insulating sheet connect the solder balls not to an underlying wiring substrate, but rather to the overlying semiconductor chip itself.

For the reasons given above, applicant submits that claims 1-9 are patentable over Miyazaki.

As regards independent Claim 12 and the new independent Claim 17, an important feature of those claims is that one end of the lead is fixed on the surface of the insulating sheet and the other end of the lead is shaped to be afloat in the holes.

The "afloat in" phrasing connotes the structure shown in present Fig. 2, wherein the lead is fixed to the insulating sheet at one end only, with the opposite end being unsupported within a hole of the sheet.

On the other hand, in Miyazaki, the lead 11 is never afloat in a hole of an insulating sheet, even in during the manufacturing process as disclosed in column 12, line 61 - column 13, line 4. During manufacturing of the lead 11, the lead 11 is initially in a straight, cantilevered configuration. Thus, at that time, the lead is over, not in, an underlying hole in the insulating sheet. Subsequently, the lead 11 is deformed into an

S-shaped element contacting the bonding pad 7. Therefore, at that time, the lead may be within a hole of an insulating sheet as represented e.g. by the elastomer 6, but the lead 11 is not afloat in that hole, as required by the present claims, because the lead 11 is then supported at both of its opposite ends.

For the reasons given above, applicant submits that claims 12-14 and 17 are also patentable over Miyazaki.

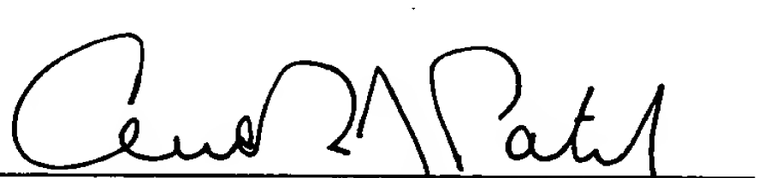
Accordingly, applicant respectfully requests that the rejection under 35 U.S.C. §103 be withdrawn.

CONCLUSION

In view of the foregoing remarks, applicant respectfully submits that all of the pending claims are in condition for allowance and an early indication of the same is respectfully requested.

Respectfully submitted,

YOUNG & THOMPSON

By 
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